

# PCA<sup>®</sup> Portable Combustion Analyzer

Combustion &  
Environmental Analyzers



## **Complete Combustion Analyzer. Reliable and Easy to Use.**

The Bacharach Portable Combustion Analyzer (PCA) is designed for complete, combustion efficiency and compliance testing for a variety of commercial and residential combustion applications.



# PCA<sup>®</sup>

## Portable Combustion Analyzer



advanced



user-friendly

The PCA is the perfect tool for service technicians and boiler contractors who need to determine carbon monoxide (CO) safety, combustion efficiency and emission testing in combustion applications. The PCA directly measures and displays flue gas O<sub>2</sub>, temperatures, draft, differential pressure, NO<sub>(x)</sub> and CO. Simultaneously, the instrument calculates and displays combustion efficiency, excess air, CO<sub>2</sub>, NO<sub>(x)</sub>-Ref. O<sub>2</sub> and CO air free. The large display shows eight different values simultaneously with backlight. The PCA provides seven (7) fuels: natural gas, oil 2, oil 4, oil 6, kerosene, liquid propane and coal, for calculating combustion values.

The PCA offers advanced communication features to track and analyze combustion safety tests, efficiency calculations and environmental analysis for residential and commercial applications.

The advanced communication features of the PCA 55 and the PCA 65 allow the user to store up to 100 tests, customize each combustion test with customer information, generate a personalized printout, and download all of this information to a personal computer for record keeping and trend analysis.

### Bacharach Listens To Its Customers

The most important goal at Bacharach is to meet the needs of you, our customer. We listened to you, and developed the PCA around your needs and requirements. We also contacted several HVAC associations including ACCA, RSES, NAOHSM, and others for their input. As a result, product features were incorporated into the design of the PCA to meet or exceed your expectations. Some of the features include a simple keypad for user friendly operation, an easy to read display showing eight different values simultaneously, an optional infrared printer to document test results and a rugged, lightweight case for added versatility during operation and transport.

BACHARACH has developed the PCA to grow with the changing test requirements of the industry. Add-ons and upgraded accessories are constantly reviewed to determine the value to you, the customer.

### Bacharach's PCA Measures CO Air Free

The CO air free unit of measurement is computed by the PCA from the CO and O<sub>2</sub> measurements. This calculated value determines the amount of CO that would be present in an oxygen free sample by compensating for the amount of excess air provided by the burner. In other words, the CO air free measurement eliminates the excess air dilution caused by primary and secondary air. American National Standards Institute (ANSI Z21) specifies the use of PPM CO air free as a unit of measure when testing certain appliances. The following are the ANSI standards: 200 ppm CO air free on an unvented space heater; 400 ppm CO air free on furnace flue gas; and 800 ppm CO air free on an unvented gas oven.



Forced Air Furnaces; Commercial Boilers; Hot Water Heaters; Gas Ovens/Stoves

## Features & Benefits

- Directly measures and displays flue gas O<sub>2</sub>, temperatures, differential pressure, Draft, CO and NO<sub>(x)</sub>
- Calculates and displays combustion efficiency, excess air, CO<sub>2</sub>, CO air free; and NO<sub>(x)</sub> - Ref.O<sub>2</sub>
- Large display shows eight (8) different values simultaneously with backlight
- Long life, disposable batteries with an optional 120 VAC power supply
- Two year warranty
- Draft, CO and NO<sub>(x)</sub> measurements (optional)
- Seven (7) North American fuels
- Dated results can be recalled to the display screen at any time
- Separate temperature sensor for combustion air
- Infra-red serial link for data transfer to printer
- Performs local emissions reporting quicker than ever before by selecting the O<sub>2</sub> reference between 0 and 15% O<sub>2</sub> (PCA 55 & 65 units only)
- Stores up to 100 combustion tests for downloading to PC or printer (PCA 55 & 65 units only)



## SPECIFICATIONS

Measurement Ranges	
Oxygen	0 to 20.9% auto calibration
Primary/Ambient Temperature	0°F to 999°F (-18° to 999° C)
Stack Temperature	0°F to 2,192°F (-18° to 1,200° C)
Carbon Monoxide (optional)	0 to 4,000 PPM (hydrogen compensated)
Draft (optional)	-28.0 to +28.0 in. WC (or user selectable in Pascal or Millibar)
NO <sub>(x)</sub> (optional)	0 to 1,000 PPM
Calculated Ranges	
Combustion Efficiency	0.1 to 99.9% (0.1% resolution)
Excess Air	1 to 250%
Carbon Dioxide	0.1 to a fuel dependent maximum value in percent
Carbon Monoxide (air free)	0 to 9,999 PPM (comes with CO measurement)
NO <sub>(x)</sub> (Ref. 0 to 15% O <sub>2</sub> )	0 to 9,999 PPM
Accuracy	
Oxygen	±0.3% Oxygen (on flue gas)
Carbon Monoxide	±5% of reading or ±10 ppm, whichever is greater between 0 to 2,000 ppm
NO <sub>(x)</sub>	±5% of reading or ±5 ppm, whichever is greater
Draft/Differential Pressure	±2% of reading or ±0.02 inches of H <sub>2</sub> O whichever is greater
Stack Temperature	±4°F between 32 to 255°F (±2°C between 0 to 124°C) ±6°F between 256 to 480°F (±3°C between 125 to 249°C) ±8°F between 481° and 752°F (±4°C between 250 to 400°C)
Primary/Ambient Temperature	±2°F between 32 to 212° (±1°C between 0 to 100°C)
Size	8.5 in. H x 3.8 in. W(at display) x 2 in. D (215mm x 96mm x 50mm)
Weight	Approximately 1.5 lbs. (0.68Kg) with batteries
Power Source	Power by four disposable AA size alkaline batteries; minimum of 8 hours of continuous operation. An optional 120 power supply is available for line operation
Display	A 20 character by 4 line alpha numeric display with backlight
Warm Up Time	A 60 second total warm up – sensors are checked and autozeroed at warm up

## ORDERING INFORMATION

MODEL NO. ITEM NO.	PCA 10 24-8040	PCA 15 24-8041	PCA 20 24-8042	PCA 25 24-8043	PCA 35 24-8045	PCA 55 24-8143	PCA 65 24-8145
Measurements: Oxygen Air Temp Stack Temp Carbon Monoxide Draft/Differential Pressure NO <sub>(x)</sub>	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■
Calculations: Combustion Eff. Excess Air Carbon Dioxide CO (air free) NO <sub>(x)</sub> (Ref. O <sub>2</sub> )	■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■	■ ■ ■ ■ ■
Output Capabilities: Printer Interface Memory Storage Customized Printout Customer ID Computer Interface	■ 10	■ 10	■ 10	■ 10	■ 10	■ 100 ■ ■ ■	■ 100 ■ ■ ■

Instrument comes complete with: carrying case, probe and hose assembly, factory calibrated and installed sensor(s), instruction manual, user guide, batteries (packaged separately) and a two-year warranty. All instruments can be upgraded to include CO, Draft or NO<sub>(x)</sub> and other option combinations are available on request.

■ - Standard with instrument

## ORDERING INFORMATION

PART NO.	DESCRIPTION
24-0788	Replacement Oxygen sensor
24-0789	Replacement CO sensor
24-0797	Replacement Draft sensor
24-0862	Filter for NO <sub>(x)</sub> sensor
24-0881	Replacement NO <sub>(x)</sub> sensor
24-0886	IR Printer
24-0887	Printer paper, one roll per package
24-1107	Replacement water/particulate trap
24-1124	20 ft. extended hose
24-0885	External power supply 120V
24-0888	External power supply 240V
24-8214	Pressure Accessory Kit
07-1644	Replacement Filter Element (short, white), pkg. of 3
07-1598	Replacement filter element (long, white), pkg. of 3
104-1797	Thermocouple 10 ft. (primary air temp.)
104-1798	Thermocouple 1 in. (for room air temp.)
21-7006	True Spot® Smoke Test Set
19-3037	Probe stop
102-0875	Thumb screw for probe stop
24-1168	Protective rubber boot



Made in U.S.A.

